

ARTICLE 417 (RECREATION MONITORING PLAN)

PROJECT NO. 2035-006

Purpose

This *Recreation Monitoring Plan* meets the requirements of Article 417 of the license. The purpose of this plan is: to determine whether or not existing recreation facilities are meeting recreation needs; and to provide Denver Water with a database that can be utilized to track recreation related trends so that informed facility, resource and management decisions can be made at Gross Reservoir.

The *Recreation Monitoring Plan* will help Denver Water and other management entities to understand the overall and site-specific use patterns at the reservoir. The plan will provide a reference for determining future management and facility needs. In addition, adverse recreational impacts can be monitored, allowing mitigation measures to be implemented before extensive facility or resource damage occurs or human safety is impaired. Finally, the plan will aid in monitoring the impact visitor use has on law enforcement, fire and safety services.

This plan is intended to provide Denver Water with the flexibility to alter facilities or management practices after an initial evaluation period. The anticipated duration of the first evaluation period is three years. After this, Denver Water should decide how best to do long-term monitoring. If problems are noticed before three years, Denver Water should use the available data to make changes as needed.

Denver Water would be responsible for developing the monitoring program, collecting and updating data and maintaining a system that would allow efficient use of information by Denver Water and adjacent entities. Each year a monitoring summary will be completed and made available to FERC. This information will be presented to the Interagency Committee and changes in facilities and management practices will be implemented according to these findings.

FERC Requirements

The following eight items address the specific requirements of FERC Article 417.

1. Monitoring of Shoreline Use and Access By Boaters

As described in Article 416 (*Recreation Management Plan*), several sensitive riparian shoreline habitats have been identified at Gross Reservoir. Signage prohibiting access to these areas will be posted. These signs will be visible from both the water and along the shoreline. In addition, educational pamphlets describing boating rules and regulation will include information on sensitive habitats.

To ensure that these areas are not being adversely impacted by recreation, a Denver Water staff person familiar with the existing site conditions will perform an annual site inspection and photo-point survey (see Facility and Resource Survey below). This photographic survey will identify changes to the riparian zones. In the event that resource damage is occurring, appropriate measures to further protect these areas will be implemented.

2. Annual Recreation Use Figures

Comprehensive information concerning recreation visitation numbers at Gross Reservoir is not available at this time. Estimates on visitor numbers can be calculated by utilizing what limited information is available. However, without accurate and comprehensive annual numbers, these figures are at best an educated guess. While visitation numbers are difficult to discern, surveys have provided us with a good indication of who is visiting Gross Reservoir and why.

As an informal means of gathering visitor data, Denver Water caretakers recorded the number of cars that were parked at visitor parking areas, as observed during the normal course of operations at various times of day. This data provides a snapshot of the average number of cars that may be parked at any time. By assuming a 1.5 car per day turnover rate, an annual vehicle projection can be made.

Caretaker Car Counts at Gross Reservoir, Plus Assumed Turnover Rate and Vehicle
Totals
1999 / 1995*

		Average cars at one time	Assumed turnover rate	Total cars per day	# days	Total cars
Spring	Weekend days	7	1.5	10.5	16	168
Spring	Weekdays	2	1.5	3	40	120
Summer	Weekend days	9	1.5	13.5	34	459
Summer	Weekdays	8	1.5	12	67	804
Fall	Weekend days	5	1.5	7.5	21	158
Fall	Weekdays	2	1.5	3	51	153
Winter	Weekend days	4	1.5	6	45	270
Winter	Weekdays	3	1.5	4.5	91	410
Overall annual avg. or total		4.6	1.5	7.0	365	2,541

*1999 data is used for spring weekend days, summer weekend and weekday days, and fall weekend days. 1995 data is used for all other days.

Source: Denver Water.

By calculating visitor numbers based upon caretaker car counts, a “ball park” annual visitation number can be derived. If we assume 2.7 persons per vehicle visited the reservoir, the annual visitation would be 6,860. Again, without accurate and comprehensive data, this information could be highly inaccurate.

In 1998, a visitor survey was conducted and included in the *Gross Reservoir Hydroelectric Environmental Assessment Volume IV Resource Report**. This survey was conducted over the course of two Fridays (one holiday, one non-holiday) during the summer. Although a sample of two days is too small for the purposes of projecting visitor volumes, it does provide an “order of magnitude” characteristic of summer visitation. It also provided a representative sample to begin understanding who is visiting Gross Reservoir and why.

- During those two days, 260 people visited the reservoir.
- Roughly 37% of the visitors were from Boulder County, the remaining 63% were from the Denver metropolitan area
- Summer weekends accounted for most of the visitation 50%, followed by summer weekdays 30% and fall weekends 10%.
- The most popular activities were fishing 70%, picnicking 40%, hiking 26%, sight-seeing 15%, camping 10% and swimming at Jumping Rock 6%.

** Complete survey results can be found in the Appendix*

This past summer (2001), *Gross Reservoir Recreation Management Plan Constituent Social Value Surveys** were completed during the public participation process for this project. These surveys asked participants about their use of Gross Reservoir. The following summary highlights the responses received from 21 neighbors, three recreational users and three agency personnel. (Note: the 21 neighbors are frequent visitors to the reservoir.)

- The neighbors said they visit Gross Reservoir throughout the seasons as often as once per day or at the very least once a month. Non-resident visitors use the facility two to four times per year.
- The most popular activities are hiking, wildlife viewing and sightseeing. A smaller number of visitors participate in camping, picnicking and four-wheeling. Only a few respondents said they participate in fishing, biking, kayaking and equestrian activities.
- The areas identified as the most popular for those activities (in descending order) were: Winiger Ridge, North Shore, Peninsula and then Rocky Point.
- Complete survey results can be found in the Appendix

In the future, comprehensive visitation information will be collected as part of the recreation monitoring program (*see Monitoring Plan Description below*). That program will provide accurate visitor and vehicle counts, in addition to tabulating visitation patterns, resource damage, facility conditions and management practices.

3. Adequacy of Facilities to Meet Recreation Demand

The proposed facility improvements comply with the FERC recreation requirements outlined in the Gross Reservoir Environmental Assessment. In addition to the FERC requirements, facility designs were developed in accordance with public input as identified in Article 414 (*Visual Resource Protection*). As described in the *Visual Resource Protection Plan*, efforts to preserve Gross Reservoir's natural environment were paramount in the development of the recreation plans.

At nine of the ten recreation sites, the FERC recreation requirements were met on-site without compromising the integrity of the environment. In the case of the Haul Road, the proposed recreation program was determined to be too intensive for the resources at this site. As a result, three of the proposed picnic sites were moved to an alternative location where their presence would have less impact.

Non-motorized car-top boating access has been provided at two locations. In selecting these sites, careful consideration was given to accessibility, typical conditions, environmental factors and the ability to monitor boating activities.

Through the monitoring program, the adequacy of the recreation facilities will be evaluated each year. Modifications to the facilities will be implemented based upon the findings of the monitoring program.

4. Monitoring Plan Methodology

The information included in the monitoring plan will be compiled for all areas within the FERC boundary. Resource damage, recreational use patterns, success of rehabilitation, and facility conditions will be evaluated at each site to determine what works, what doesn't work, and why.

The FERC boundary area will be broken up into relevant sectors. A standard map of each sector, the sites within each sector and the whole site will exist that is easily reproduced, used in all site inspections and used to plot any "new" informal sites or areas of intrusion (see below). Those sectors will correspond to the areas identified in the Management Plan (Rocky Point, North Shore Recreation Access, Peninsula, South Boulder Creek, etc.). All monitoring will be tracked within each sector and consistent variables will be established for monitoring and therefore, evaluation consistency. Therefore, there would be a logical connection between the plan and the monitoring.

Initially the following information will be collected and evaluated as part of the monitoring plan:

Visitor Use

Information on numbers, demographics, fee/regulation compliance and visitation patterns of Gross Reservoir visitors will be compiled. This data will be collected through intercept surveys, observation, patrol contacts and parking permit purchase feedback.

Facility/Resource Conditions

Yearly inspections will assess facility conditions and effectiveness within the FERC boundary. Any overall evaluation system that studies numerous variables at the same time is most effective. As much as possible, the variables used to evaluate the site should be the same for each site: e.g., condition of site furniture, site vegetation, cleanliness of site, existence, or lack thereof of informal access trails, etc. There should, however, be a section for general/miscellaneous comments specific to each site and its peculiarities. All areas will be examined to determine whether or not the facilities are adequate and how much wear or damage is occurring. A check-off sheet using a graduated scale to indicate relative condition (e.g., 1 through 5, 1 being excellent, 5 being poor and those in between, etc. The parameters of each scale interval will be determined in advance); that pre-prepared means works to eliminate, as much as possible, researcher bias. The assumption being that non-professionals, lead by specialists, will be doing the monitoring, and that good consistent and understandable data can manage public scrutiny, which will be a large factor in any management adjustments based on the results from the monitoring program. Maintenance schedules and procedures will be included with this information. In addition, field inspections will assess how resources are holding up to recreational use. Periodically, there should be a total "walk-around" in order to observe the creation of any new, informal recreation sites. Such findings should then be plotted on a map, the nature of the site and respective use noted, an inventory of site "facilities," access points/means noted and remediation/enforcement recommendations developed. An integral part of the monitoring will not only be to monitor how the selected sites are working, but to determine whether or not certain sites should be closed, new sites opened or sites should be redesigned.

Management Practices

To ensure the safety of visitors and the protection of recreation facilities and natural resources, careful monitoring of all law enforcement, fire and emergency medical services will be conducted. The means by which that data is collected can be determined by the inter-agency management group. A common report form or a common electronic platform/bulletin board can serve to collect the data from the relevant agencies and keep the data consistent for better analysis and display. This is something that can be set up at Denver Water and accessed by the other relevant agencies.

Other unanticipated factors or issues may arise after the implementation of this plan. In this case, additional monitoring practices or procedures will be implemented.

Data Collection

Initially three collection methods will be utilized in compiling the Gross Reservoir Recreation Monitoring Plan database. Those methods should give Denver Water a good understanding of their visitors, how the facilities and resources are being used/abused and what, if any management practices need to be adjusted.

1. Visitor Use Survey

Purpose

The purpose of the Visitor Use Survey is to monitor visitor use numbers, types of visitors, visitor compliance, visitation patterns and facility adequacy. This information will help Denver Water in offering the facilities and management services when and where they are needed most.

Methodology

Conduct an annual (totally confidential) survey on-site to record numbers and use patterns for parking and circulation, hiking, picnicking, fishing, boating, camping and biking. To gain a sense of the overall use, this survey should be conducted during a high-use period (summer holiday weekend), and during an average-use period (middle of the week early or late in the boating season), at the same time of day on each occasion and for the same interval of time. An important component to the annual survey will be personal interviews. These interviews will collect visitor data related to:

- Visitor's point of origin
- Activities, sanctioned and unsanctioned
- Group size
- Age, ethnic origin, gender, income
- Amount of visitation
- Other local sites visited/activities
- Adequacy of facilities and maintenance
- Point of original access to the reservoir - any in and out
- Perceptions of attributes of the site - recreational and aesthetic
- Perceptions of drawbacks of the site - recreational and aesthetic
- Other comments

These personal interviews will be conducted in the field and managed by Denver Water staff or hired specialists. Coinciding with the personal interviews, additional visitor data will be collected including:

- Visitor counts by area
- Vehicle counts in parking areas and on roads. Electronic traffic counters will be placed at key roads such as the Dam Road, near the north and south entries, across parking lot access points and along the roads leading to the Haul Road and Dam.

- Counts on the number of parking permits purchased by area
- Trail logs for the South Boulder Creek Inlet Trail, the Winiger Ridge Trail and the Winiger Gulch Inlet Trail.
- Deputies and rangers records of public contacts.

Outcome

Denver Water should compile a database in one central location that is in a format that is easily accessed by surrounding entities (USFS, BCOS, BCSO, Cherryvale FPD and other interested parties). This information should be used to make informed visitor use, facility and management decisions.

2. Facility and Resource Surveys

Purpose

The purpose of the facility and resource survey is to monitor how recreation facilities are holding up and to look at the success and failures of the rehabilitation and restoration efforts. In addition, this survey will locate areas where new resource damage is occurring.

Methodology

Conduct an annual field survey to monitor actual facility and resource changes. A specialist familiar with the existing site conditions and the restoration techniques will conduct a mid-summer survey. The data collection should include a photo-point survey. This photographic inventory will document the conditions of the following site features:

- Existing structures including buildings, signage and fences
- Recreation amenities including picnic tables, grills, fire-rings and trails
- Restored landscape areas
- Areas where new resource damage is occurring

Once the permanent photo locations are established, subsequent photos should be taken each year to document changes.

In addition to the field survey, several ongoing monitoring systems will be in place including:

- Maintenance schedules – describing how often toilets and picnic areas are pumped/cleaned, when trash containers are emptied and how often and what type of facility repairs have been made
- Deputies and rangers monitor and record observations on standardized forms as a routine patrol function - these will be the same forms used for monitoring visitor use

Outcome

Denver Water should compile a database in one central location that is in a format that is easily accessed by surrounding entities (USFS, BCPOS, BCSO, Cherryvale FPD and

other interested parties). This information would enable Denver Water to intervene before severe facility or resource damage occurs. The photo inspection would also reveal less noticeable changes including erosion and the widening of trails.

3. Law Enforcement and Safety Monitoring

Purpose

The purpose of the Law Enforcement and Safety Monitoring Plan is to ensure there is adequate law enforcement, fire and emergency medical services for visitors. This plan will also identify the shortcomings of day-to-day management practices, in addition to ensuring the efficient and effective allocation of resources.

Methodology

Working with the various stakeholder entities, Denver Water would compile a database documenting the following information and management practices.

- All enforcement personnel will record citations, warnings, and other law enforcement contacts on standardized forms as a routine patrol function.
- All enforcement personnel will record all smoke reports, boat rescues, and law enforcement, fire and medical incidents on standardized forms (Incident Report) as a routine patrol function and provide 4 times a year to Denver Water.
- The Recreation Manager maintains a computerized database of citations, warnings, other law enforcement contacts, and law enforcement, fire and medical incidents and send that data to the Denver Water personnel responsible for all the monitoring data.
- Prior to May 30 the Recreation Manager meets with area law enforcement and emergency fire/medical personnel (BSCO, USFS, FPDs, Boulder County Parks and Open Space) to discuss problems and coordinate services.
- On a regular basis, the Recreation Manager meets with the BCSO to review and analyze BCSO law enforcement in the Gross area. BCSO also discusses law enforcement regularly with the Interagency Committee.
- The Recreation Manager and area law enforcement and emergency fire/medical personnel (BSCO, USFS, FPDs) develop a system for the rapid and efficient exchange of records and information related to law enforcement and emergency services.
- The Recreation Manager works with USFS to compile and analyze observation data collected by citizens as part of a Forest Watch or similar program. This information is also provided to the BCSO.
- The Recreation Manager tracks the disposition of all citations issued to monitor outcomes and to strengthen the relationship between Gross Reservoir enforcement personnel and the District Attorney's office and the District Court.

- The interim 2002 Law Enforcement Plan will be monitored on a yearly basis and revised as necessary.

Outcome

Denver Water should compile a database in one central location that is in a format that is easily accessed by surrounding entities (USFS, BCOS, BCSO, Cherryvale FPD and other interested parties). Using this data, Denver Water will provide specific descriptions on what will occur and how those changes will be implemented.

5. Revised Recreation Plan Process

The visitor use, facility adequacy, resource condition and law enforcement and safety data collected through these monitoring programs will be evaluated each year by the Interagency Committee and needed changes will be identified and implemented in a prioritized manner.

6. Implementation Schedule

The data and monitoring practices described in the *Recreation Monitoring Plan* will be compiled annually once the plan is accepted. Each year a tabulation and summary of the *Recreation Monitoring Plan* will be prepared. A complete monitoring report will be filed with the commission every six years in conjunction with FERC form 80.

7. Agency and Public Comments

Agency and public comments to this *Recreation Monitoring Plan* will be included in the final FERC submittal.

8. Response to Agency and Public Comments

A written response to agency and public comments will be included in the final FERC submittal.